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**Institute of Makers of Explosives Safety Analysis for Risk (IMESAFR):
A Tolerable Risk Criteria – What Is Safe Enough?**

By

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The Institute of Makers of Explosives (IME), a non-profit safety and security organization founded in 1913, is known for its industry best practices, Safety Library Publications (SLP), some of which have been incorporated into rules by regulatory agencies. The IME developed the first commercial storage, quantity distance (Q/D) table titled “The American Table of Distances” (ATD). It was developed by IME’s legacy association in 1910 and was originally based on observations of structural damage from 117 accidental explosions involving small to very large amounts of explosives, primarily dynamite and black powder. In 1930, the IME published a book, compiled by Ralph Assheton, called the “History of Explosions on Which the American Table of Distances was Based” (Assheton, 1930)¹. The distance in feet in the ATD were founded on the measurements at which inhabited buildings sustained substantial structural damage from the accidental detonation of explosives. For example, minor damage such as window glass breakage and the “shaking down” of plaster was not considered substantial structural damage. Other damage to property that was readily repairable was also not considered “substantial.” It was concluded that unless some integral portion of the building was damaged, the occupants would not be subjected to serious risks.

The ATD was developed with a conservative premise that an explosion was somewhat probable. However, the limitations of this standard are recognized given that risk is not zero beyond the ATD distance or arc.

*Storage of large quantities of explosives in heavily populated or built-up areas should be avoided. While the tables provide adequate and reasonable protection for exposures in rural areas, the statistical nature of blast damage makes it inadvisable to subject multiple exposures to blasts at the distances prescribed.*²